

Floods in New York-1970

By
F. Luman Robison
U.S. Geological Survey



REPORT OF INVESTIGATION
RI-14

1973

New York State Department of Environmental Conservation

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Prepared by
UNITED STATES DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

in cooperation with
NEW YORK STATE DEPARTMENT OF TRANSPORTATION
and
NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

STATE OF NEW YORK
DEPARTMENT OF ENVIRONMENTAL CONSERVATION

1973

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INTRODUCTION

This report was prepared at the request of the New York State Department of Transportation under an agreement between the New York State Department of Environmental Conservation and the U.S. Geological Survey to investigate the water resources of the State.

The report was compiled in the New York District, U.S. Geological Survey, under the direction of Robert J. Dingman, District Chief. Information was obtained from newspaper clippings, records of the U.S. Geological Survey, and publications of the Environmental Data Service of the National Oceanic and Atmospheric Administration, (formerly ESSA, Environmental Science Services Administration) "Climatological Data," and "Storm Data."

OUTSTANDING FLOODS, SOUTH-CENTRAL NEW YORK, JULY 3-4

The two most damaging floods in New York in 1970 occurred on July 3-4, one in Tompkins and Schuyler Counties and the other in Broome and Delaware Counties. (See figures 1 and 2.)

Tompkins and Schuyler Counties

On July 3 an early evening cloudburst struck adjoining parts of Tompkins and Schuyler Counties between Ithaca and Watkins Glen. Rainfall gages southwest of Ithaca recorded from 3.9 to 5.1 inches in approximately 90 minutes. The rapid rise of small streams caused widespread washouts of bridges, culverts, highways, and rural roads. The most severely damaged villages in the area were Newfield and Enfield, in Tompkins County, and Odessa, Montour Falls, and Watkins Glen, in Schuyler County. Railroad tracks in both counties were blocked by washouts and mud slides. Some campers and rural residents were marooned in the Connecticut Hill section of southwestern Tompkins County. The picnic area and the swimming pool in Tremans State Park near Ithaca were damaged by washouts and deposits of mud. Some streets in Watkins Glen and Montour Falls were badly flooded and littered with mud and debris.

Intermittent showers on July 4 brought the 24-hour precipitation total to 5.97 inches at the rain gage just west of the village of Newfield. An unofficial total of 6.5 inches was reported at Watkins Glen. Figure 1 is a location map showing precipitation stations and sites where flooding was reported.

Tompkins and Schuyler Counties were declared disaster areas by the Federal Government. Damages to public facilities were estimated to be \$350,000 in Tompkins County and \$450,000 in Schuyler County.

One incident that could have been more serious occurred when a 650-gallon propane gas storage tank toppled into a creek at Newfield and was carried 500 feet downstream before the tank valves could be shut off. About 200 people were evacuated from an area near a trailer park.

Broome and Delaware Counties

In the evening of July 3, cloudbursts were reported in parts of Broome and Delaware Counties. Rains of 3.0 to 5.0 inches in less than 2 hours were reported at Deposit, which straddles the line between the two counties. Much of the village was ravaged by flash flooding of two streams, Bone Creek and Butler Brook. Streets and culverts were clogged with rocks and mud, and large sections of pavement were washed out. Basements and street-level floors in business establishments and homes were flooded. Parked cars were damaged as they were carried along by the rushing water.

The mayor of Deposit declared a state of emergency, and deputy sheriffs closed all county roads into the village from the west. Flood damage was heaviest in the areas of Second and Front Streets in the western section of the village. The flood resulted from the overflowing of Bone Creek, normally a small, inches-deep trickle that has its source in the hills northwest

of Deposit. Damage in the Pine Street-Wheeler Street area, at the village's eastern extremity, was caused by the overflow of water from Butler Brook. Failure of a dam on Palmer Pond released water that contributed to the discharge of the brook.

Hydrologists of the U.S. Geological Survey made indirect measurements of peak discharge at three sites after the flood. Results of these measurements are shown in table 1. The discharge at the gaging station on Oquaga Creek at Deposit was the greatest in the 30 years that the gage has been in operation. At the sites where indirect measurements were made, the discharges were estimated to have recurrence intervals greater than 100 years.

Figure 2 is a map showing areas of flooding and location of sites where peak-discharge measurements were made.

Figure 3 is a stage hydrograph showing the rise and fall of Oquaga Creek at Deposit, July 3-8.

SUMMARY OF OTHER FLOODS

In addition to the floods of July 3-4, described under "Outstanding Floods," flood damage in New York in 1970 consisted generally of minor flooding of streets and highways and basements of homes and business establishments, even though near-record rainfalls occurred in many areas of the State.

There were a few reports of minor flooding from ice jams in January and February.

Heavy rains in the New York City-Long Island-Westchester area flooded parkways and hampered subway transportation in February and again in April.

One of the most damaging local floods occurred in Orange County in April, when nearly 6,500 acres of black-dirt farmland was inundated just before planting season for lettuce and onions. Residents reported the flood to be the worst in 15 years.

Rainfall caused more flooding in July than in any other month in the year. In addition to the flood of July 3-4, at Deposit, this village suffered some flood damage on three more occasions within a 25-day period. Torrential rains in St. Lawrence and northern Franklin Counties flooded parts of Massena and other communities. Three inches of rain in 7 hours was the most intense rainfall recorded at the Massena airport in 30 years of record. Widespread flooding of streets and highways in Southwestern Tier counties resulted from thunderstorms with as much as 3 inches of rainfall.

In August and September, flooding was reported in the southwestern counties. Some 500 persons in the villages of Hartfield and Dewittville were evacuated from their homes for several hours. At Westfield, in southwestern Chautauqua County, rainfall of 4.22 inches was measured. This was the third highest 24-hour total in 70 years of record.

In October, Willowemoc Creek and Little Beaver Kill forced five families from their homes in Livingston Manor. Much of the \$204,000 repair work which had been completed after the July 1969 flood was destroyed. The total damage to public facilities was estimated to be \$300,000.

Locations of regions and sites where damage was reported throughout 1970 are shown in figure 4.

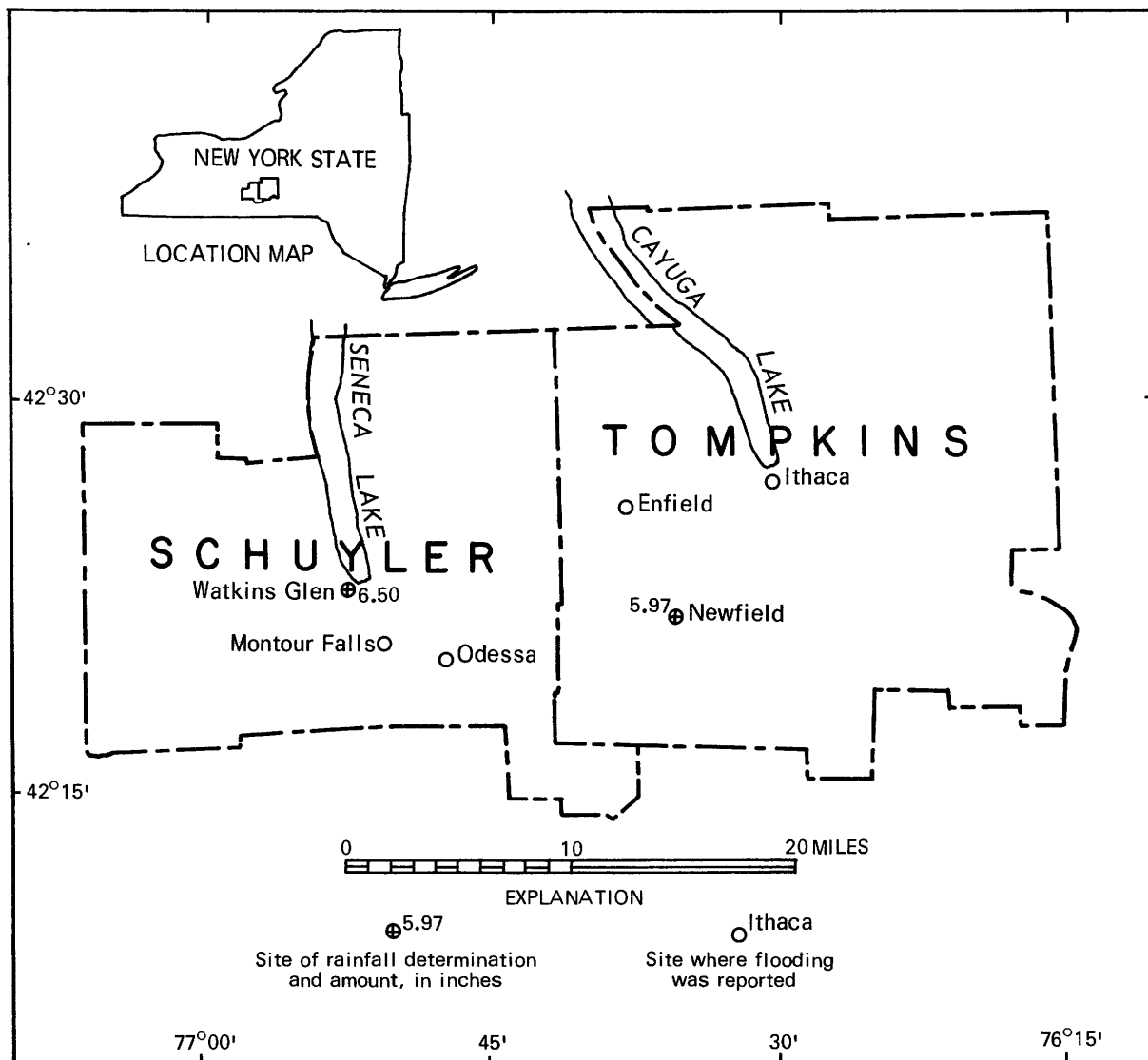


Figure 1.--Location of precipitation stations and sites where flooding was reported, July 3-4, 1970, Schuyler and Tompkins Counties, N.Y.

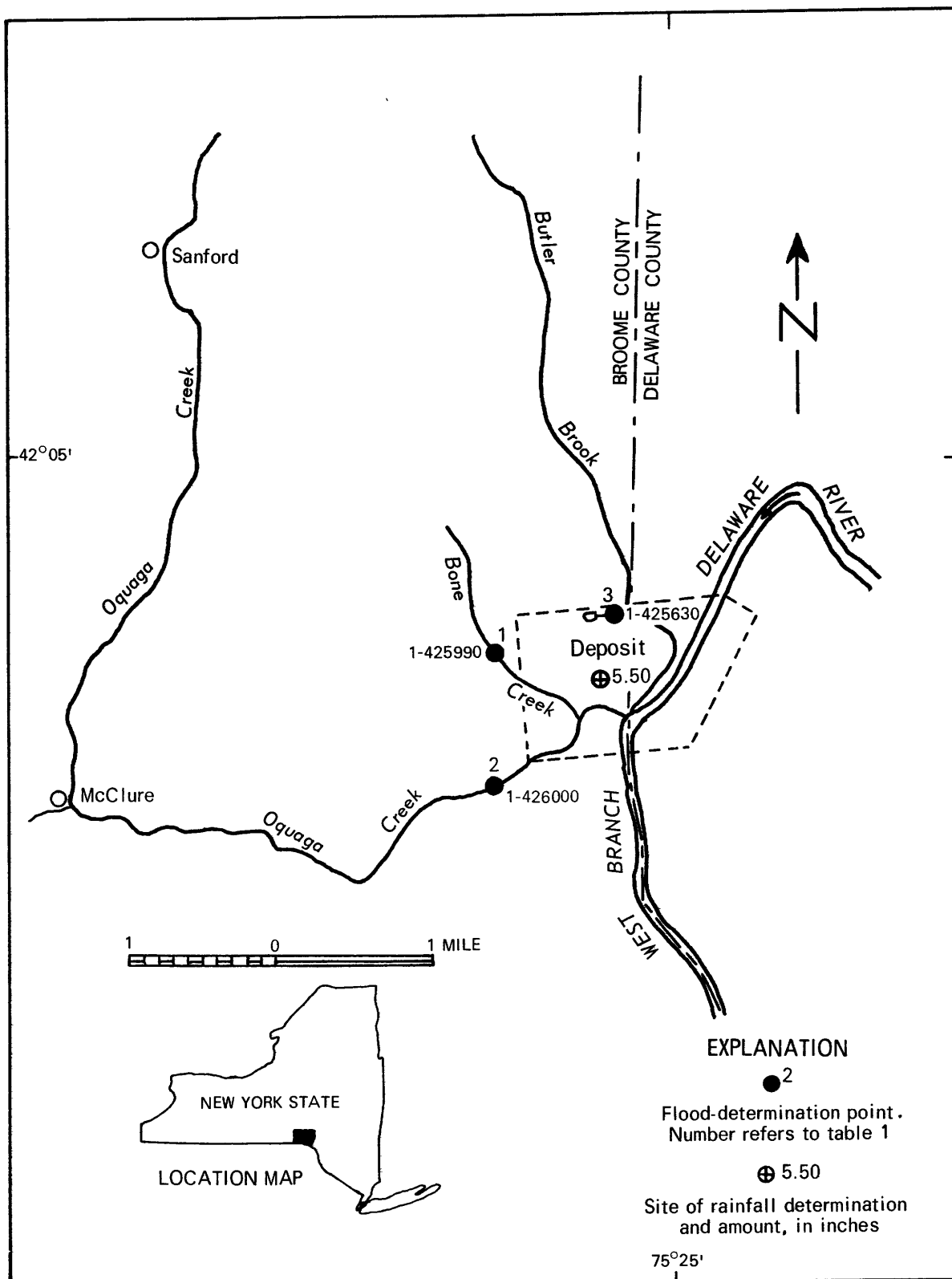


Figure 2.--Location of flood-determination points and precipitation station, flood of July 3-4, 1970, Deposit, N.Y.

Table 1.--Measurements of peak discharges for flood of July 3-4, 1970, at Deposit, N.Y.

Stream and place of determination (numbers refer to figure 2)	Drainage area (sq mi)	Period of record	Maximum flood previously known			Maximum during present flood		
			Date	Gage height (ft)	Discharge (cfs) (cfs/sq mi)	Gage height (ft)	Discharge (cfs) (cfs/sq mi)	Recurrence interval (years)
1. 1-425990 Bone Creek near Deposit, N.Y.	0.97	--	--	--	--	--	1,790 1,850	>100
2. 1-426000 Oquaga Creek at Deposit, N.Y. (at gage).	66.4	1940-70	Mar. 10, 1964	7.07	5,850 88.6	8.98	7,200 109	>100
3. 1-425630 Butler Brook Tributary at Deposit, N.Y.	5.41	--	--	--	--	--	1,810 335	>100

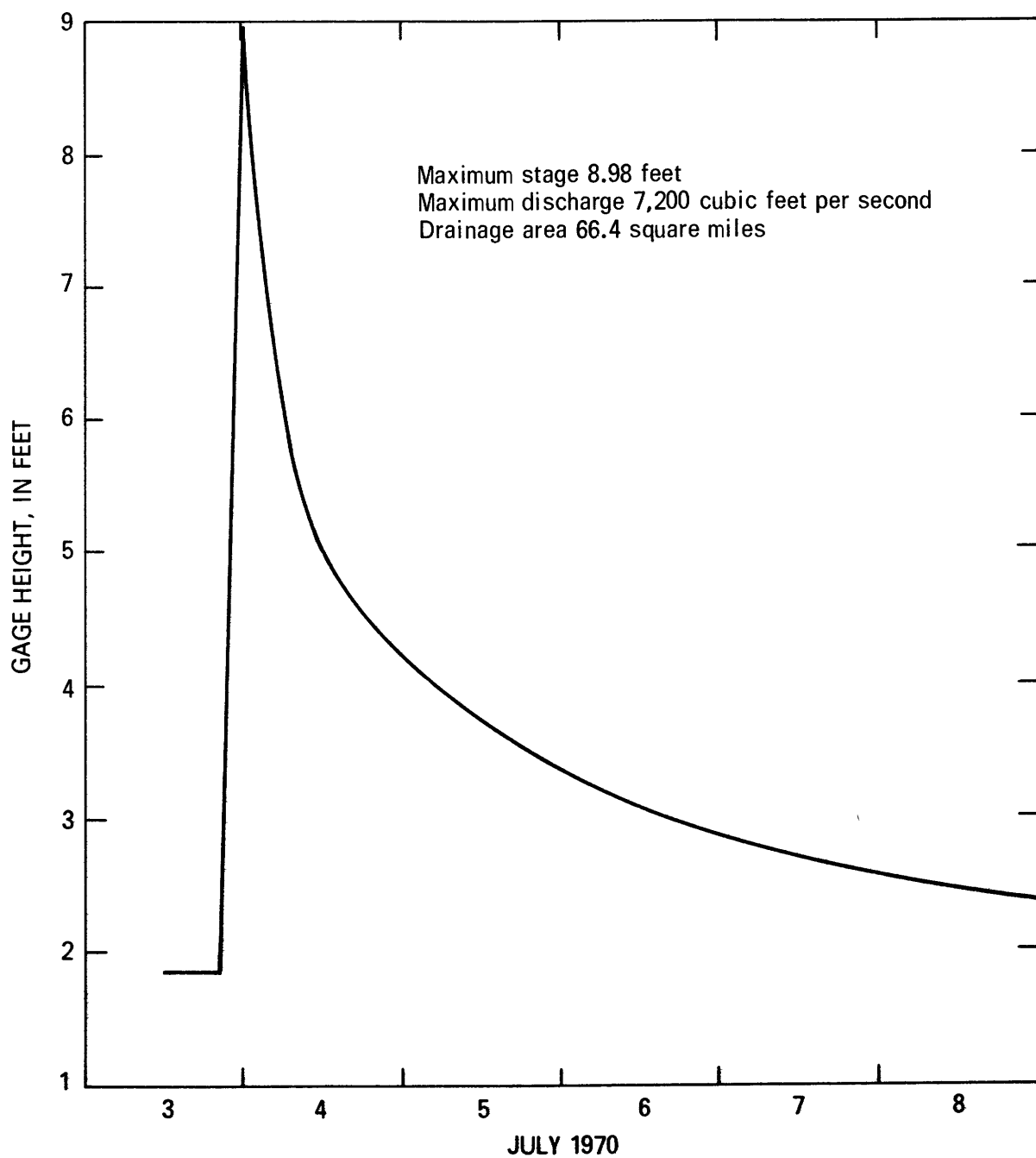


Figure 3.--Stage hydrograph for Oquaga Creek at Deposit, N.Y.

CHRONOLOGICAL DESCRIPTIONS OF FLOODS WITHIN REGIONS

Succeeding paragraphs describing floods are edited versions of news items in the indicated publications. Flood accounts have been grouped by regions, as shown in figure 4. The news items are in chronological order within each region.

Southeastern Region

STORM DATA AND UNUSUAL WEATHER PHENOMENA, February 3

Snow melt, ice jams, and heavy rains caused local overflow of streams, which contributed to the flooding of highways, lowlands, and new housing developments in Orange, Rockland, Westchester, Richmond, and Nassau Counties. Rainfall ranged from 1.5 to 2.5 inches on Long Island.

ELLENVILLE JOURNAL, February 5

Ellenville police reported minor flooding from an ice jam in the Beer Kill on February 3.

ELLENVILLE TIMES HERALD RECORD, February 5

Heavy rains that concluded a pre-spring thaw caused minor surface-drainage flooding in the Washingtonville area.

STORM DATA AND UNUSUAL WEATHER PHENOMENA, February 10

Heavy rains caused widespread flooding in New York City and in Nassau and southern Westchester Counties. Expressways north of the city were closed for up to 12 hours owing to deep flooding of several sections. Severe flooding of streets and basements was reported on Staten Island and in the cities of Mount Vernon, Mamaroneck, and Larchmont, Westchester County. Railroads and subway trains into New York City were hampered by flooded tracks and electrical short circuits. A mud slide near Tarrytown blocked the main rail line along the Hudson River. Precipitation total of 2.63 inches in New York City approached record 24-hour rainfall for February. Precipitation ranging from 0.8 to 1.5 inches in Rockland and Orange Counties caused some streams to overflow banks and wash out highways.

NEW ROCHELLE STANDARD, February 11

The overflowing Sheldrake River yesterday flooded the basement rooms of some homes in New Rochelle. One development in the area has been flooded periodically over the last 3 years.

WHITE PLAINS REPORTER DISPATCH, February 11

A half-mile stretch of the Saw Mill River Parkway was still closed this morning by flooding from the heavy rains that also closed parts of the Hutchinson River and Bronx River Parkways for several hours. At the Westchester County Airport, a record 2.66 inches of precipitation was reported.

YONKERS HERALD STATESMAN, February 11

After yesterday's record rainfall, water from Troublesome Brook flooded lawns and basements in Yonkers. This stream has flooded the Crestwood area for many years. In the backyard of one home, water was nearly 6-feet deep.

MIDDLETOWN RECORD, February 11

Heavy rains that drenched Orange and Sullivan Counties yesterday caused minor flooding of many small streams.

NYACK JOURNAL NEWS, February 11

The Squires Gate section of Suffern was flooded again last night.

STORM DATA AND UNUSUAL WEATHER PHENOMENA, April 3

Precipitation ranging from 2.0 to 3.0 inches on Long Island and in the southeastern part of the State and from 1.0 to 2.0 inches at other points in the State caused many streams to overflow, especially in the Hudson Valley. The Susquehanna River crested 1.0 to 5.0 feet above flood stage. Many highways were flooded; traffic was greatly hampered in greater New York City; schools were closed in Chenango County owing to flooded roads; and a landslide closed U.S. Highway 11 near Tully, Cortland County.

POUGHKEEPSIE JOURNAL, April 3

A ruptured dike along the rampaging Wappinger Creek caused the evacuation today of occupants from 10 trailers at a trailer park in the town of Poughkeepsie. Last night several families left their homes in other parts of the basin, as flood waters threatened. Route 9 north of Hudson River State Hospital was flooded with nearly 2 feet of water.

YONKERS HERALD STATESMAN, April 3

The Easter weekend snow and more than 2 inches of rainfall yesterday combined to raise Saw Mill River and Troublesome Brook to flood levels. Basements and lawns of homes in the flood-prone area of Crestwood and along Saw Mill River were flooded.

MIDDLETOWN RECORD, April 5

The worst flood in 15 years has hit Orange County's black-dirt area and inundated almost 6,500 acres of the State's richest agricultural land just as area farmers began planting lettuce and onions. Almost 3 inches of rain followed a series of snowstorms and caused rapid runoff and swelling streams last week. Governor Rockefeller has been asked to declare the muckland a disaster area.

BINGHAMTON SUN BULLETIN, July 7

Damage to Deposit from the flash flood on last Friday and Saturday was estimated at \$2 million by the mayor of the village. He said that amount would be necessary to repair streets, bridges, and sidewalks and would not include the cost of repairing the channel of Bone Creek, the stream that caused most of the damage.

(Additional information concerning the flood in the Deposit area can be found in the Central Region section.)

BINGHAMTON PRESS, July 15

The Small Business Administration today declared Broome and Delaware Counties and adjacent areas hit by July 3 flash floods as disaster areas. This declaration allows owners of homes and businesses and churches and other charitable institutions affected by the flood to apply for special loans at 3-percent interest, payable over a 30-year period.

BINGHAMTON PRESS, July 16

Waters of Bone Creek and Butler Brook were rising dangerously today in flood-battered Deposit, and there was some new flooding from Butler Brook in Boulevard and Elm Streets.

BINGHAMTON PRESS, July 20

Bone Creek ran wild again early today for the third time in 15 days and flooded two streets and the Erie-Lackawanna Railroad station in Deposit. Flooding of the station and cellars on Front and Mill streets was attributed to a blocked culvert under the railroad tracks.

STORM DATA AND UNUSUAL WEATHER PHENOMENA, July 20

Heavy early morning rains in sections of eastern Broome County caused a return of flooding in Windsor and Deposit. Occanum Creek and tributaries rose rapidly, and the creek overflowed its banks in Windsor. This resulted in severe flood and erosion damage to highways and a community park. Three bridges were damaged. Flash flooding on Bone Creek again flooded some streets and basements in Deposit.

STORM DATA AND UNUSUAL WEATHER PHENOMENA, July 29

Heavy, short-duration rains and local flooding accompanied afternoon thunderstorms over a wide area from the central counties to the lower Hudson valley. Deposit, in eastern Broome County, was struck by flooding for the fourth time in a month, as 1.4 inches of rain in 90 minutes caused Bone Creek to overflow. Street flooding was reported in southern Westchester County.

ONEONTA STAR, July 30

The fourth flood in 25 days to sweep down Bone Creek and inundate parts of the village of Deposit hit late Wednesday afternoon, with flooding in the area of the Erie Lackawanna Railroad depot and at the rear of stores on the south side of Main Street.

NEW YORK TIMES, August 24

The first big rainstorm of August swept over New York City yesterday and left streets and highways awash in low-lying areas.

STORM DATA AND UNUSUAL WEATHER PHENOMENA, August 30

Precipitation from thunderstorms and heavy rains around the State today ranged from 2.0 to 2.6 inches.

STORM DATA AND UNUSUAL WEATHER PHENOMENA, October 21-23

Heavy rains of 3 to 5 inches fell in a 36-hour period in the Catskill region, covering Greene, Ulster, and Sullivan Counties. Flash flooding occurred on the Beaver Kill and Willowemoc Creek in Sullivan County. The village of Livingston Manor and town of Rockland sustained damage estimated at \$300,000. The newly renovated sewage plant was washed out, roads and streets were blocked, and schools were closed.

MIDDLETOWN RECORD, October 24

The raging waters of Willowemoc Creek and Little Beaver Kill flooded parts of Livingston Manor Thursday night and Friday. More than 3 inches of rain fell between 7 p.m. and 11 a.m. Five families were forced to evacuate their trailer homes. Some cellars, lawns, streets, and roads were flooded. Much of the \$204,000 repair work done by the town of Rockland Highway Department and the U.S. Army, Corps of Engineers last year was reported to have been destroyed.

MONTICELLO EVENING NEWS, November 5

The October 23 flood caused an estimated \$300,000 damage in the town of Rockland. Of the total, \$60,000 was included for restoring the small covered bridge above DeBruce, \$8,000 for damage to the Livingston Manor sewer plant, \$60,000 for repairing a severe washout on the Roscoe-Beaver Kill town highway, and the remainder for repairing other highways.

Eastern Region

SCHENECTADY GAZETTE, February 5

A family of five was temporarily left homeless in Blenheim yesterday when a massive ice jam caused Schoharie Creek to surround their home with fast moving water. Volunteers from the Sheriff's Office, the Civil Defense, and the Blenheim and Schoharie Fire Department removed the family by boat from the newly formed island after a first attempt failed because of the strong current.

ALBANY KNICKERBOCKER NEWS, April 3

The 1½ inches of rain that fell on the Albany area yesterday caused flooding of some streets and one earthslide.

TROY TIMES RECORD, April 3

Rain accompanied by high winds in the Troy area yesterday flooded some streets and caused several landslides and washouts in Rensselaer County.

ONEONTA STAR, April 11

Flooding along both sides of the Susquehanna River for approximately 6 miles north of the Goodyear Lake Dam have already forced the evacuation of two families in the Portlandville area. One resident claimed the flooding to be the worst he has seen in the 15 years he has lived there.

STORM DATA AND UNUSUAL WEATHER PHENOMENA, June 3

Early afternoon thunderstorms yielded heavy rains of 1.5 to 2.5 inches in the city of Troy and in other sections of Rensselaer County. The cooperative weather observer at Troy reported 1.7 inches in 1 hour. City streets were flooded and impassable to traffic for some time after the storm. Some commercial buildings and homes reported basement flooding. Rains of 0.5 to 1.0 inch occurred in Albany and Saratoga Counties. A park and some streets were flooded in Saratoga Springs, where erosion of soil fill caused a stone wall to collapse.

STORM DATA AND UNUSUAL WEATHER PHENOMENA, June 18

Heavy, short-duration rains in afternoon and early evening fell in an area extending from eastern Finger Lakes to eastern Mohawk valley, with 2.16 inches in 2 hours reported at Tribes Hill.

Northern Region

WATERTOWN TIMES, April 3

A 1.72-inch rainfall in a 24-hour period triggered floods yesterday in the Watertown area. Streets and basements of homes and business establishments were flooded.

WATERTOWN TIMES, April 27

Minor flooding occurred to the back yards of homes along the banks of Chubb River at Lake Placid when an unused upstream power dam collapsed.

WATERTOWN TIMES, June 27

A 12-hour storm produced between 3.33 and 3.42 inches of rain overnight at Watertown. It was the heaviest precipitation for any comparable period in years. Flooding of streets, highways, and basements was reported.

STORM DATA AND UNUSUAL WEATHER PHENOMENA, July 11

The St. Lawrence River valley in St. Lawrence and northern Franklin Counties received a series of heavy showers during morning and early afternoon of July 11. Total precipitation ranging from 2.5 to 3.0 inches extended from Alexandria Bay northeast to Malone in northern Franklin County. City Hall, dozens of stores, and the newspaper offices were damaged in basements and on street-level floors in Massena. Similar flood damage was reported in Ogdensburg, where part of a basement wall collapsed from the high water. Lesser flooding and damage was reported in the Malone area.

OGDENSBURG ADVANCE, July 12

Torrential rains struck the Massena area Saturday morning. Main Street was flooded in front of Town Hall. The water rose up to the doors of some stores, and a parking lot was flooded.

MASSENA OBSERVER, July 14

Exactly 3.08 inches of rain fell on Massena on Saturday, July 11. Three inches of that amount fell between 6:35 a.m. and 1:30 p.m. This was the most intense rainfall ever recorded at the town of Massena airport in its 30 years of existence.

Central Region

STORM DATA AND UNUSUAL WEATHER PHENOMENA, June 18

Heavy, short-duration rains in afternoon and early evening fell in an area extending from the eastern Finger Lakes to eastern Mohawk valley. Skaneateles received from 3.0 to 4.6 inches of rain in 2½ hours. Utica recorded 1.66 inches in 1 hour, and Tribes Hill recorded 2.16 inches in 2 hours. Rains caused road washouts in many sections of Monroe, Wayne, and northern Ontario Counties. Flooding occurred in many communities from the Auburn-Skaneateles area to Syracuse and vicinity.

STORM DATA AND UNUSUAL WEATHER PHENOMENA, July 3

An early evening cloudburst struck adjoining parts of Tompkins and Schuyler Counties in the area between Ithaca and Watkins Glen. Standard rain gages located between 4 and 8 miles southwest of Ithaca measured precipitation ranging from 3.9 to 5.1 inches in approximately 90 minutes. Rapid rising and flash flooding of brooks and streams caused widespread washouts of bridges, culverts, highways, rural roads, and recreation areas. Principally affected were villages of Newfield and Enfield, in Tompkins County, and Odessa, Montour Falls, and Watkins Glen, in Schuyler County. Railroad tracks were blocked in several places in both counties by mud slides, debris, or washouts. Campers and rural residents were marooned in the Connecticut Hill section of southwestern Tompkins County. Treman State Park, near Ithaca, was damaged by washout of a picnic area and deposits of mud and rock in the swimming pool. Streets in Watkins Glen and Montour Falls were badly flooded and littered by wires, trees, and limbs. Intermittent showers on July 4 brought the 24-hour precipitation total to 5.91 inches in the standard rain gage just west of the village of Newfield. An unofficial storm total of 6.50 inches was reported at Watkins Glen. The Federal Government declared Tompkins and Schuyler Counties disaster areas after flood damages were estimated at \$350,000 in Tompkins County and \$450,000 in Schuyler County. Thunderstorms also struck the Syracuse area, where the U.S. Weather Bureau Airport station measured 1.3 inches of rain in 37 minutes. Streets and expressways were flooded by 2 feet of water in some places.

ALBANY TIMES UNION, July 5

State Police reported that a gas storage tank at Newfield, containing 650 gallons of propane toppled into a creek on July 3 and was carried about 500 feet downstream after high water undermined its footings. About 200 people were evacuated from the area near a trailer park before the tank's valves could be shut off.

ITHACA JOURNAL, July 13

The storm of July 3 caused considerable damage in the rural area near the village of Newfield, Tompkins County. Many roads, culverts, and bridges were badly damaged. Several roads will remain closed indefinitely because financial assistance is not immediately available. Many lawns and field crops were ruined.

STORM DATA AND UNUSUAL WEATHER PHENOMENA, July 3

Early evening cloudbursts in the southeastern Finger Lakes region were repeated later in the evening some 70 miles to the east in adjoining parts of Broome and Delaware Counties. Rain of 3.0 to 5.0 inches in less than 2 hours was reported at Deposit, as much of the community was ravaged by flash flooding of two brooks and surface runoff. Streets were clogged with mud, rocks, and trees. Large sections of streets were washed out, and numerous commercial establishments and homes were flooded in basements or street-level floors. Parked cars were carried by flood water in village streets, some buildings were battered by floating trees, and trailer homes were flooded in a trailer park. Damage in the village was estimated to be in excess of \$2 million. Towns of Sanford, Windsor, and McClure in eastern Broome County were also affected by flash floods. Four highway bridges were damaged in the Windsor area. A large dairy farm in the town of Sanford sustained heavy loss to a barn, farmsheds, machinery, and several hundred acres of pasture, corn, and other crops. A flash flood on Gilly Creek poured water several feet deep through a barn and drowned several cows. Flood damage at the farm was estimated to be in excess of \$150,000. Broome and Delaware Counties were declared Federal disaster areas.

BINGHAMTON PRESS, July 5

The corn crop of a large farm just north of McClure in the town of Sanford is gone. About 1,300 acres of pasture and fields were destroyed in a few hours Friday night and early yesterday as a freak thunderstorm blasted its way across eastern Broome County.

Within an hour Friday night, Gilly Creek hurled tons of water through the doors of the main dairy barn, tossed cattle about, smashed walls, and turned the barnyard into muck. Five or possibly ten cows were drowned.

BINGHAMTON PRESS, July 5

Residents of the eastern part of Broome County today are continuing the massive, dirty job of digging out of the debris of the worst flash floods in decades in that part of New York State. Declared to be in a state of emergency by the mayor, the village of Deposit was sealed to all outside traffic beginning about 8 a.m. yesterday. All county roads into the village from the west were closed by deputies. Some roads were clogged with debris, undermined, or washed out by the raging water that spilled from the hills of eastern Broome County starting about 9 a.m. Friday (July 3).

Flooding was widespread throughout the towns of Windsor and Sanford; the heaviest damage was in the Sanford lowlands along the Route 17 expressway. The dam at the southern end of Deer Lake, town of Windsor, which broke in a flash flood some years ago, was under as much as 3 feet of water early yesterday, as the lake level reportedly rose nearly 4 feet. State Police at Deposit said the fact that the Deer Lake dam did not fail may have saved the village of Deposit from disaster.

In Deposit the damage was heaviest in the areas along Second Street and Fourth Street, but water seeped into scores of cellars and first floors throughout the village. The worst damage was probably caused by the overflowing of Bone Creek, normally a small, inches-deep trickle that begins in the hills northwest of Deposit. Almost all houses and businesses on the south side of Second Street and on all of Front Street, the main business street of Deposit, had water in basements and on ground floors. Residents said water was 2 to 3 feet deep on Second and Front Streets. Nearly every street in the village was caked with a heavy layer of mud. Damage in the Pine Street-Wheeler Street area, at the village's eastern extremity, was caused by the failure of a dam at the east end of Palmer Pond. When the water from this pond was added to the already-high Butler Brook, its banks overflowed. Trailers at a trailer court were extensively damaged by the water. Although swollen with creek and brook runoff, neither the Delaware River nor Oquaga Creek overflowed their banks.

BINGHAMTON PRESS, July 22

President Nixon today designated the counties of Broome, Delaware, Tompkins, and Schuyler as disaster areas as a result of damage during the flooding earlier in the month. This designation makes communities eligible for Federal aid for repair or replacement of sewer and water systems and roads and bridges. Sunday night's storm caused minor flooding in Windsor, Conklin, and Kirkwood.

BINGHAMTON PRESS, July 23

Governor Rockefeller's office reported a preliminary estimate of \$1,400,000 damage caused by the torrential rain of July 3 in the Southern Tier counties.

BINGHAMTON PRESS, August 31

Twelve hours of electrical storms in the Southern Tier yesterday left behind a muddled mess of mire and debris. Automobile owners abandoned cars in flooded streets, and hundreds of basements were flooded in the triple cities area. Rainfall of 4.2 inches was measured just north of Binghamton in Morningside Heights.

Western Region

BUFFALO EVENING NEWS, February 2

On Thursday, January 29, water from ice-jammed Cazenovia Creek flooded some streets and basements of a few homes in the village of West Seneca. Seventeen families were forced to evacuate their homes.

BUFFALO COURIER EXPRESS, February 3

About 30 families evacuated their homes last night in West Seneca, when water from Cazenovia Creek rose 4 feet in 4 hours. Town employees touched off dynamite blasts every 20 minutes for 7½ hours in an effort to break up the 1½-mile-long ice jam. The two affected residential areas were Southgate and St. David.

STORM DATA AND UNUSUAL WEATHER PHENOMENA, July 15

Southwestern Tier sections from Chautauqua to Steuben Counties experienced heavy rains in morning, afternoon, and early evening thunderstorms. Precipitation totals ranged from 1.5 to 3.0 inches, with heaviest amounts mostly in the area extending from Lake Erie to Allegany County. Widespread flooding of streets and roads was reported in Salamanca, Olean, and Bolivar.

NORTH TONAWANDA NEWS, July 21

Torrential rains yesterday in western New York flooded streets in North Tonawanda.

OLEAN TIMES, August 1

Two flash floods struck the village of Cattaraugus Friday afternoon and evening. Houses, streets, and highways were damaged, as water carrying stones and dirt poured off hillsides. An official weather observer reported the rainfall at 3.81 inches. One foot of water flooded some streets. A few houses on Mill Street were damaged by water that came in through the rear doors and went out the front.

STORM DATA AND UNUSUAL WEATHER PHENOMENA, August 22-23

Nighttime thunderstorms produced intense downpours of rain in southwestern New York, with totals ranging from 2.0 to 3.4 inches in wide areas of Chautauqua and Cattaraugus Counties. Flash flooding of streams forced evacuation of 500 persons in the villages of Hartfield and Dewittville, and many streets were flooded in Mayville. Stream flooding in Sinclairville knocked out a section of the village water system. Three bridges were washed out, and many roads were flooded in central Chautauqua County and at Little Valley and other communities in western Cattaraugus County. Low-lying crop lands were inundated in scattered areas of both counties.

BUFFALO COURIER EXPRESS, August 24

Heavy rain in sections of Chautauqua and Cattaraugus Counties Saturday and early Sunday flooded roads and cellars and washed out bridges and bridge approaches. Flooding was heaviest in the vicinity of Hartfield and Dewittville Creeks, Chautauqua County, and at West Valley and vicinity, Cattaraugus County. Southeast of Mayville, where Dewittville Creek flows into Chautauqua Lake, water rose 4 feet above the creek banks. Residents of cottages, mobile homes, and travel trailers fled to the Dewittville Fire Hall. They returned to their homes about 7 a.m. Sunday. Some boys and adult counselors left the YMCA camp on the lake shore near the creek when water threatened their facilities. They took refuge in the Dewittville Fire Hall. Several residents near the mouth of Hartfield Creek found safety in the Hartfield Fire House after wading through water 3 to 4 feet deep.

STORM DATA AND UNUSUAL WEATHER PHENOMENA, September 8-9

As much as 4 inches of rain fell in the Westfield, Ripley, Mayville, and Jamestown areas of southwestern Chautauqua County during the evening and early morning hours and inundated some highways, shopping plazas, fields, and low-lying areas. Grape vineyards suffered extensive damage from soil erosion and washout of poles. At Westfield, 4.22 inches of rain was measured. It was the third heaviest 24-hour rainfall in 70 years of record.

DUNKIRK OBSERVER, September 9

Tuesday night, for the third time in less than a month, Chautauqua County fell victim to a downpour of rain, which caused heavy flooding throughout the county. Fields and vineyards were washed out, and many county and State highways were closed.

BUFFALO COURIER EXPRESS, November 16

Heavy rains during the first half of the month flooded fields and closed at least one highway in Wyoming and Livingston Counties

BUFFALO EVENING NEWS, November 28

Some streets in Lackawanna were flooded today with as much as 4 feet of water at railroad underpasses.



New York State Department of Environmental Conservation